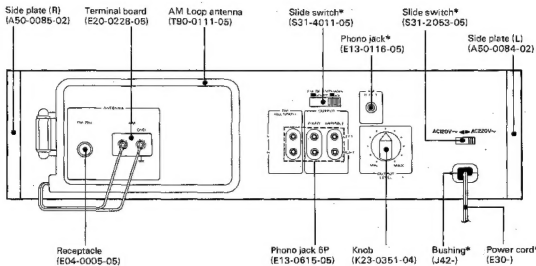
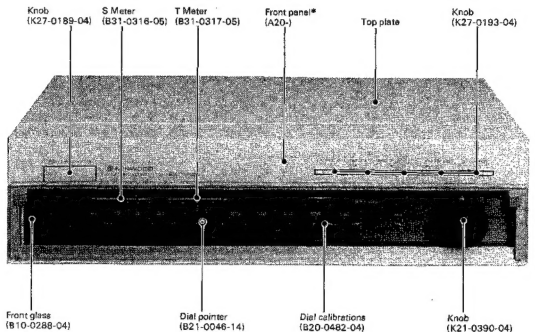


 **KENWOOD®**

KT-1000

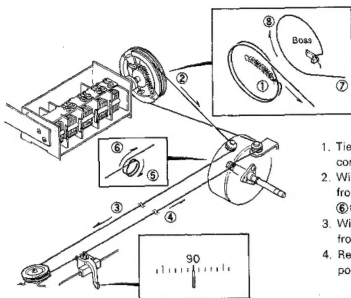
AM-FM STEREO TUNER



* Refer to Parts List.

DIAL CORD STRINGING/DISASSEMBLY FOR REPAIR

DIAL CORD STRINGING

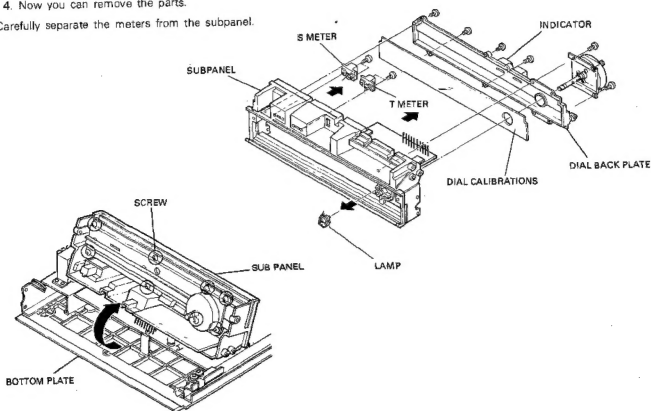


1. Tie the end of the dial cord to the spring. Dress the dial cord in the direction ① through ④.
2. Wind the dial cord 2 turns around the dial shaft starting from its upper side. Dress the dial cord in the direction ⑤ through ⑦.
3. Wind the dial cord 1 turn around the dial pulley starting from its lower side. Fix the dial cord to the boss: (⑧⑨).
4. Receive a 90 MHz signal and then mount the dial pointer at the 90 MHz position of the dial calibrations.

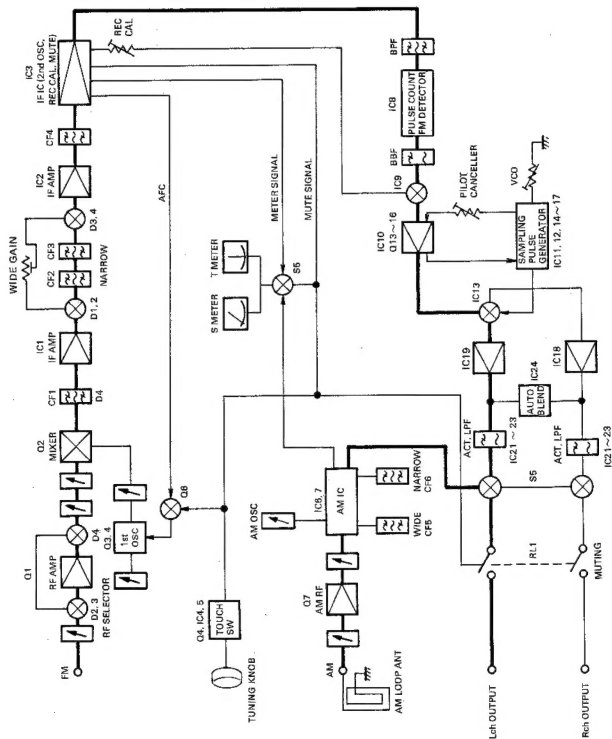
DISASSEMBLY FOR REPAIR

1. Remove the dial cord and the panel.
2. Loosen the screws of the subpanel.
3. Turn the subpanel as illustrated.
4. Now you can remove the parts.

Carefully separate the meters from the subpanel.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

1. RF SELECTOR

The KT-1000's front end provides a normal position of high sensitivity at which a single-tuning circuit, RF amplifier, and double-tuning circuit work and a direct position at which a triple-tuning circuit works.

- (1) At NORMAL position, a positive voltage applied to terminal Vsw of the front end turns on Q1 via R2 and turns on D3 via R18 and L10. C24 and C27 of the tuning circuit float from the ground since D2 and D4 are biased reversely, and instead C25 and C26 compensate. (C25

and C26 are grounded with D3 on.) L8 ~ L10 do not comprise a tuning circuit but simply work as choke coils.

- (2) At DIRECT position, a negative voltage applied to terminal Vsw cuts off Q1 and D3 goes off. An input signal coming from antenna enters the first tuning circuit and, via C25 and C26, goes to the second and third and finally comes to the mixer, bypassing the RF amplifier. Because D2 and D4 are on in DIRECT position and C24 and C27 respectively make up the first and second tuning circuits.

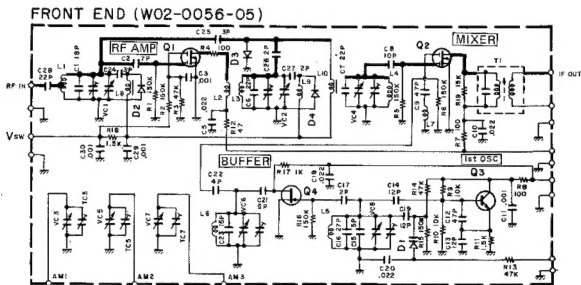


Fig. 1-1

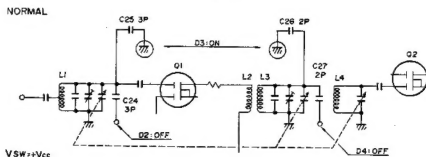


Fig. 1-2

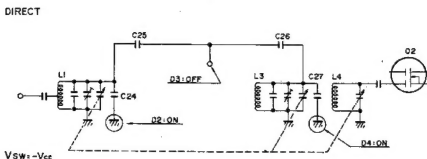


Fig. 1-3

CIRCUIT DESCRIPTION

2. SAMPLING PULSE GENERATOR

A sampling pulse generator which makes use of C-MOS devices is described here. For the pilot canceller, MPX, and emphasis selector, refer to KT-917 service manual.

IC14 (2-input OR gates) outputs a sampling pulse or "H" to switch over stereo and monaural modes. At the monaural mode, the output is always "H" since pin 5, an input pin (Q20's collector) of the OR gate, is "H". At the stereo mode, Q20 outputs "L" and the OR gate outputs "H" only when pin 6 of the OR is "H". Thus the output waveform is the same as the sampling pulse.

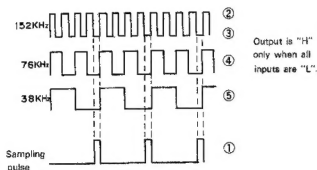


Fig. 2-1

IC15 and IC16 (4-input NOR gates) outputs NOR pulses of 152 kHz, 76 kHz, and 38 kHz. Figure 2-1 is the timing diagram of IC15. An output pulse appears just before the rise of the 38-kHz square wave. The other NOR gate contained in IC15 receives the inverted waveform of the 38-kHz square wave and outputs a pulse waveform which is out of phase by $\pi/2$. (See Figure 2-2.) IC16 as well as IC15 receives 38-kHz square waves and inverted 76-kHz square wave and outputs pulses shifted by $\pi/4$ and $3/4\pi$. The outputs of IC16 are used as sampling pulses of the L and R channels. The outputs of IC15 are used as sampling pulses for cancelling SCA beating.

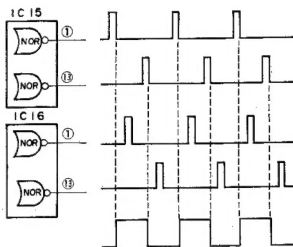


Fig. 2-2 L-channel switching 38-kHz pulse and sampling pulses.

IC17 (D-F-F) divides a 152-kHz pulse coming from IC12 into a 76-kHz pulse. Part of the output is routed to the PLL via a differentiator.

IC12 (VCO) oscillates at 304-kHz and outputs a square wave of 152-kHz which is supplied to IC15 ~ IC17 via buffer Q23.

IC11 (PLL) which makes up a PLL along with IC12 and IC17 generates the pilot cancelling pulse and 38-kHz square wave.

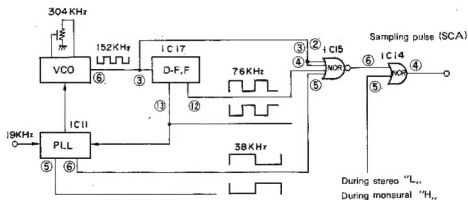


Fig. 2-3

CIRCUIT DESCRIPTION

3. TOUCH SENSOR SERVO LOCK

When the tuning knob is touched, AFC is released and an extra-low frequency range is cut off for easy tuning. When the tuning knob is touched, the oscillator consisting of Q4, L7, and C40 (Which is directly connected to L7) stops oscillation.

When the knob is not touched, the oscillator's output rectified by D9 appears as a positive voltage at the cathode and enters IC4 through pin 3 (non-inverting input of an operational amplifier). A voltage of approximately +8V appears at pin 1 of IC4 and, inverted by Q32, turns off Q6.

When the knob is touched, only the current supplied through R40 flows through D9 and its anode becomes positive and cathode negative. IC4 inverts the input and

generates approximately -8V. Q32 inverts the output to turn on Q6 and short the AFC signal. On the other hand, the output of IC5 which is connected to the output of IC4 via D42 also becomes approximately -8V. This voltage turns off CMOS-SW of IC9 to cut extra-low frequencies of FM demodulated signals. The initial condition will be restored as soon as one releases the knob. But CMOS-SW turns on after completion of the servo lock operation by giving a time constant to the input circuit of IC5. CMOS-SW is normally turned on to cut off extra-low frequency components, which would appear when an FM receiver is tuned in or out and would be heard as a popping noise. In the normal state (CMOS-SW ON) extends frequency response to the extra-low frequency range.

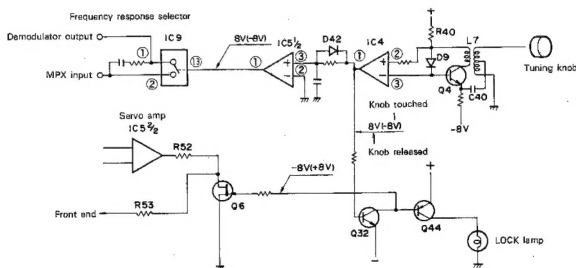


Fig. 3 Touch sensor servo lock

ADJUSTMENT

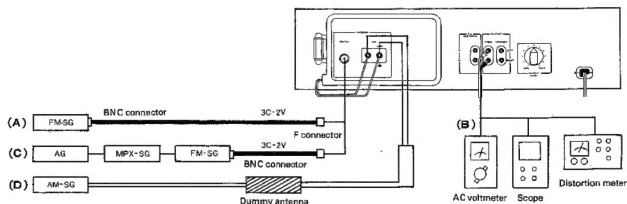
Set the MODE switch to AUTO/MUTING, IF BAND switch WIDE and RF SELECTOR switch NORMAL, REC CAL switch OFF, unless otherwise specified.

NO.	ITEM	SYSTEM CONNECTIONS	TEST EQUIPMENT SETTING	TUNER (RECEIVER) SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG. NO.
FM SECTION							
1	T METER (1)	(A) *1	95 MHz 1 kHz, 75 kHz dev	95 MHz MODE: MONO IF BAND: NARROW	—	*2	
2	T METER (2)	ditto	95 MHz 1 kHz, 75 kHz dev 60 dB *3	95 MHz MODE: MONO	L4	T meter pointer to be at the center.	
3	S METER	ditto	95 MHz 1 kHz, 40 kHz dev 60 dB *3	95 MHz	VR1 (X13-2960)	*4	
4	WIDE GAIN	ditto	95 MHz 1 kHz, 40 kHz dev	95 MHz IF BAND: NARROW MODE: MONO	—	*5	
5	WIDE GAIN	ditto	*6	95 MHz IF BAND: WIDE MODE: MONO	VR1	S meter deflection. Same as NARROW.	
6	REC CAL	(B)	—	REC CAL: ON	VR2	0.38V	(18)
7	DISTORTION (STEREO)	(C)/(B)	95 MHz 1 kHz, 68.25 kHz dev *7 60 dB *3 Selector: L or R	95 MHz	T1 (Front end)	Minimum distortion	
8	PILOT CANCELLER	(C)/SCOPE to the connecting point of R151 and R152	95 MHz Pilot signal 60 dB *3	ditto	VR11, L17	Minimum output	(5) (13)
9	VCO	(C)/Frequency counter to the connecting point of R162 and Q17 via SSVN. *8	95 MHz 0 (dev) 60 dB *3	ditto	VR10	76 kHz	
10	SCA (L)	(C)/(B)	95 MHz 67 kHz, 7.5 kHz dev Selector: L + R 60 dB (ANT input)	95 MHz	VR8	Minimum output	
11	SCA (R)	ditto	ditto	ditto	VR9	Minimum output	
AM SECTION							
(1)	RF ALIGNMENT (AM)	(D)/(B)	600 kHz 400 Hz, 30% mod	AM 600 kHz	L11, 12, 13	Maximum amplitude and symmetry of the oscilloscope display.	
(2)	RF ALIGNMENT (AM)	(D)/(B)	1400 kHz 400 Hz, 30% mod	AM 1400 kHz	TC3, 5, 7	Maximum amplitude and symmetry of the oscilloscope display.	
Repeat alignments (1) and (2) several times.							
(3)	S METER	(D)/(B)	1400 kHz 60 dB (ANT input)	1400 kHz	VR3	*4	
(4)	T METER	ditto	ditto	ditto	VR4	T meter pointer to be on the center line.	

ADJUSTMENT

Note: Separation has been adjusted using accurate measuring instruments. Since an ordinary MPX-SG does not have sufficient phase accuracy (especially at 10 kHz), do not use one for separation adjustment. It is not recommended that separation is adjusted in servicing. For reference, separation adjustment procedures are shown in the following.

NO.	ITEM	SYSTEM CONNECTIONS	TEST EQUIPMENT SETTING	TUNER (RECEIVER) SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG. NO.
①	SUB	(C)/(B)	95 MHz 1 kHz, 68.25 kHz Dev #7 60 dB #3 Selector: L-R	95 MHz	L16	Maximum output	⑭ ⑮
②	SEPARATION (1)	ditto	95 MHz 1 kHz, 68.25 kHz Dev #7 60 dB #3 Selector: L	95 MHz IF BAND: WIDE	VR5 (L → R)	Minimum crosstalk from the other channel.	
③	SEPARATION (2)	ditto	95 MHz 1 kHz, 68.25 kHz Dev #7 60 dB #3 Selector: R	ditto	VR8 (R → L)	ditto	
④	SEPARATION (3)	ditto	95 MHz 10 kHz, 68.25 kHz Dev #7 60 dB #3 Selector: L or R	ditto	L9	ditto #9	
Repeat alignments "① ~ ④" several times.							
⑤	SEPARATION (4)	(C)/(B)	95 MHz 1 kHz, 68.25 kHz Dev #7 60 dB #3 Selector: L or R	95 MHz IF BAND: NARROW	VR7	Minimum crosstalk from the other channel.	
⑥	AUTO BLEND	ditto	95 MHz 1 kHz, 68.25 kHz Dev #7 26 dB #3 Selector: L or R	ditto	VR2 (X13-2960)	Middle crosstalk from the other channel	⑫ ⑬

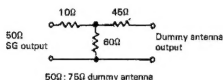


ADJUSTMENT

TEST INSTRUMENTS

Oscilloscope	SCOPE
AM signal generator	AM-SG
FM signal generator	FM-SG
Audio frequency generator	AG
AC voltmeter	
FM multiplex generator	FM-MPX
Frequency counter	
DC voltmeter	
Distortion meter	
Dummy antenna	

- *1. To perform precise adjustment, a SG (with 75Ω output impedance) must be directly connected to the tuner. Use a connecting cable with a BNC connector at the SG end and an F connector at the tuner end. When an open-scaled SG (which indicates the output level when no load is connected) is used, subtract 6 dB from the SG reading to obtain ANT input level. If the output impedance of the SG is 50Ω, use a new IHF standard 50Ω:75Ω dummy antenna.



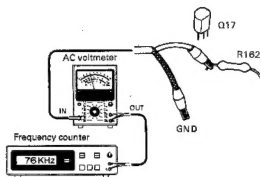
If an open-scaled SG is used, subtract 12 dB from the SG reading to obtain ANT input level. If a load-scaled SG (which indicates the output level when a 50Ω load is connected) is used, subtract 6 dB from the SG reading.

- *2. Adjust the tuning knob so that the same amount of noise is observed at the top and bottom of the output waveform with a weak signal.



- *3. Tuner input level.
- *4. S-meter deflection: 4.8 scale graduations.
- *5. TUNER input to achieve a S-meter deflection of 3 scale graduations.
- *6. TUNER input obtained at Step 4.
- *7. Set deviation to ± 68.25 kHz with selector in L + R position.
Set deviation of pilot signal to 6.75 kHz (9%).

*8



- *9. If sufficient separation cannot be obtained, turn L9 within $\pm 5^\circ$ (if they are turned too much, separation at 1 kHz will deteriorate).

REGLAGES

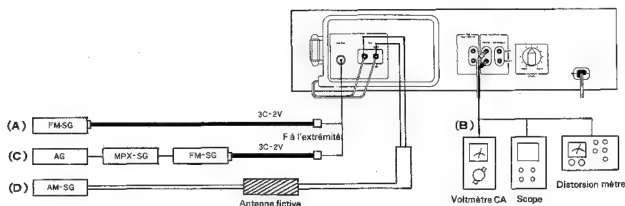
Placer le MODE dans la position AUTO/MUTING, IF BAND sur WIDE, RF SELECTOR sur NORMAL et REC CAL sur OFF sauf indique spécialement.

N°	ITEM	RACCORDEMENTS DU SYSTEME	REGLAGE DE L'APPAREILLAGE	REGLAGE DU TUNER (AMPLI-TUNER)	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG. N°
SECTION MF							
1	INDICATEUR A ZERO CENTRAL (1)	(A) *1	95 MHz 1 kHz (mod) 75 kHz (dév)	95 MHz MODE: MONO	—	*2	
2	INDICATEUR A ZERO CENTRAL (2)	idem	95 MHz 1 kHz (mod) 75 kHz (dév) 60 dB (Entrée ANT) *3	95 MHz MODE: MONO	L4	Aiguille de l'indicateur à zéro central en position centrale.	
3	INDICATEUR DE CHAMP	idem	95 MHz 1 kHz (mod) 40 kHz (dév) 60 dB (Entrée ANT) *3	95 MHz	VR1 (X13-2960)	*4	
4	GRAND GAIN	idem	95 MHz 1 kHz (mod) 40 kHz (dév)	95 MHz IF BAND: NARROW MODE: MONO	—	*5	
5	GRAND GAIN	idem	*6	95 MHz IF BAND: WIDE MODE: MONO	VR1	Déviator du Vu-mètre: La même que pour NARROW.	
6	REC CAL	(B)	—	REC CAL: ON	VR2	0.38V	⑥
7	DISTORSION (STEREO)	(C)/(B)	95 MHz 1 kHz (mod) 68,25 kHz (dév) *7 60 dB (Entrée ANT) *3 SELECTION (L ou R)	95 MHz	T1 Tête H.T.)	Distorsion minimale.	
8	CIRCUIT SUPPRES- SION DE SIGNAL PILOTE	(C)/Relier le SCOPE au point de connexion de R151 et R152.	95 MHz signal pilote 60 dB (Entrée ANT) *3	idem	VR11, L17	Sortie minimale.	⑤ ⑬
9	OSCILLATEUR 76 kHz	(C)/Compteur de fréquence au point d'intersection à R182 et Q17 par SSVm. *8	95 MHz 0 (dév) 60 dB (Entrée ANT) *3	idem	VR10	76 kHz	
10	SCA (L)	(C)/(B)	95 MHz 87 kHz (mod) 7.5 kHz (dév) SELECTION (L + R) 60 dB (Entrée ANT)	95 MHz	VR8	Sortie minimale.	
11	SCA (R)	ditto	ditto	ditto	VR9	Minimum output.	
SECTION MA							
(1)	RF ALIGNMENT (AM)	(D)/(B)	600 kHz 400 Hz, 30% mod	AM 600 kHz	L11, 12, 13	Maximum amplitude and symmetry of the oscilloscope display.	
(2)	ALIGNEMENT H.T. (MA)	(D)/(B)	1400 kHz 400 Hz, 30% mod	AM 1400 kHz	TC3, 5, 7	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
Répéter les alignements (1) et (2) plusieurs fois.							
(3)	INDICATEUR DE CHAMP	(D)/(B)	1400 kHz 60 dB (Entrée ANT)	1400 kHz	VR3	*4	
(4)	INDICATEUR A ZERO CENTRAL	idem	idem	idem	VR4	Aiguille de l'indicateur à zéro central en position centrale.	

REGLAGES

Note: La séparation a été réglée en utilisant des instruments de mesure de précision. Du fait qu'un MPX-SG ordinaire n'a pas une précision de phase suffisante (généralement à 10 kHz), ne pas utiliser un tel appareil pour le réglage de la séparation. Il n'est pas recommandé d'effectuer le réglage de la séparation lors de l'entretien. Les opérations de réglage de la séparation sont indiquées à la suite en référence.

N°	ITEM	RACCORDEMENTS DU SYSTEME	REGLAGE DE L'APPAREILLAGE	REGLAGE DU TUNER (AMPLI-TUNER)	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG. N°
①	SUB	(C)/(B)	95 MHz 1 kHz (mod) 68,25 kHz (dév) *7 60 dB (Entrée ANT) *3 SELECTION: (L - R)	95 MHz	L16	Sortie maximale.	⑭ ⑮
②	SEPARATION (1)	idem	95 MHz 1 kHz (mod) 68,25 kHz (dév) *7 60 dB (Entrée ANT) *3 SELECTION: (L)	95 MHz IF BAND: WIDE	VR5 (L → R)	Diaphonie minimale.	
③	SEPARATION (2)	idem	95 MHz 1 kHz (mod) 68,25 kHz (dév) *7 60 dB (Entrée ANT) *3 SELECTION: (R)	idem	VR6 (R → L)	idem	
④	SEPARATION (3)	idem	95 MHz 10 kHz (mod) 68,25 kHz (dév) *7 60 dB (Entrée ANT) *3 SELECTION: (L ou R)	idem	L9	idem *9	
Répéter les points "①~④" plusieurs fois.							
⑤	SEPARATION (4)	(C)/(B)	95 MHz 1 kHz (mod) 68,25 kHz (dév) *7 60 dB (Entrée ANT) *3 SELECTION: (L ou R)	95 MHz IF BAND: NARROW	VR7	Diaphonie minimale.	
⑥	AUTO BLEND	idem	95 MHz 1 kHz (mod) 68,25 kHz (dév) *7 26 dB (Entrée ANT) *3 SELECTION: (L ou R)	idem	VR2 (X13-2960)	Diaphonie milieu.	⑫ ⑬

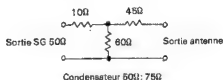


REGLAGES

APPAREILLAGE

Oscilloscope SCOPE
 Générateur MA AM-SG
 Générateur MF FM-SG
 Générateur audio fréquences AG
 Voltmètre CA
 Générateur multiplex stéréo FM-MPX
 Fréquencemètre
 Voltmètre CC
 Distorsiomètre
 Antenne fictive

- *1. Pour réaliser un ajustement précis, SG (avec 75Ω d'impédance de sortie) doit être connecté directement au tuner. Utiliser un câble de connexion avec un connecteur BNC à l'extrémité de SG et un connecteur F à l'extrémité du tuner. Quand un SG à échelle ouverte (ce qui indique que le niveau de sortie au moment où il n'y a aucune charge de connectée) est utilisé, soustraire 6 dB de la lecture SG pour obtenir le niveau d'entrée ANT. Si l'impédance de sortie de SG est de 50Ω, utiliser une antenne artificielle de 50Ω: 75Ω de la nouvelle norme IHP.



Si un SG à échelle ouverte est utilisé, soustraire 12 dB de la lecture SG pour obtenir le niveau d'entrée ANT. Si un SG à échelle chargée (ce qui indique le niveau de sortie au moment où la charge de 50Ω est connectée) est utilisé, soustraire 6 dB de la lecture SG.

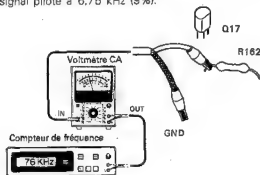
- *2. Adjuster le bouton d'accord de façon que la même quantité du bruit puisse être observé au sommet et en bas de la forme d'onde de sortie sous des conditions d'alimentation de signal faible.



- *3. Niveau d'entrée du tuner.
 *4. Déviation de l'indicateur de champ: 4,8 graduations de l'échelle.
 *5. TUNER entrée pour obtenir une déviation de 3 graduations d'échelle de l'indicateur de champ.
 *6. TUNER entrée obtenue dans l'opération 4.

- *7. Régler la déviation à $\pm 68,25$ kHz avec le sélecteur en position L+R (gauch + droite). Régler la déviation du signal pilote à 6,75 kHz (9%).

*8.



- *9. Si l'on ne peut obtenir une séparation suffisante, tourner L9 dans les limites de $\pm 5^\circ$. Si l'on tourne de trop, la séparation à 1 kHz sera dépassée.

ABGLEICH

Außers wenn anders angegeben, MODE-Schalter auf AUTO/MUTING, IF BAND-Schalter auf WIDE, RF SELECTOR-Schalter auf NORMAL und REC CAL auf OFF einstellen.

NR.	GEGENSTAND	SYSTEM-ANSCHLÜSSE	PRÜFEINRICHTUNG-EINSTELLUNG	TUNER (RECEIVER)-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB. NR.
JKW-ABTEILUNG							
1	KANAL-MITTEN-ANZEIGER (1)	(A) *1	95 MHz 1 kHz, 75 kHz Hub	95 MHz MODE: MONO	—	*2	
2	KANAL-MITTEN-ANZEIGER (2)	dito	95 MHz 1 kHz, 75 kHz Hub 60 dB *3	95 MHz MODE: MONO	L4	Nadel des Kanalmitte- Anzeigers muß auf Mittellinie stehen.	
3	FELDSTÄRKE-INSTRUMENT	dito	95 MHz 1 kHz, 40 kHz Hub 60 dB *3	95 MHz	VR1 (X13-2960)	*4	
4	FELDSTÄRKE-INSTRUMENT (WEIT)	dito	95 MHz 1 kHz, 40 kHz Hub	95 MHz IF BAND: NARROW MODE: MONO	—	*5	
5	FELDSTÄRKE-INSTRUMENT (WEIT)	dito	*6	95 MHz IF BAND: WIDE MODE: MONO	VR1	S-Meter-Ausschlag: Gleich wie bei NARROW.	
6	REC CAL	(B)	—	REC CAL: ON	VR2	0.38V	15
7	KLIRRFAKTOR (STEREO)	(C)/(B)	95 MHz 1 kHz, 68,25 kHz Hub *7 60 dB *3 SELECTOR: L oder R	95 MHz	T1 (Frontende)	Minimale Klirr.	
8	PILOT-LÖSCHER	(C)/SCOPE zum Anschlusspunkt von R151 und R152.	95 MHz Pilotsignal 60 dB *3	dito	VR11, L17	Minimaler Ausgang.	5 13
9	SPANNUNGS-GEREGELTER OZILLATOR	(C)/Den Frequenz- zähler über SSVM zum Schnittpunkt von R162 und Q17 *8	95 MHz 0 (Hub) 60 dB (Eingangssignalpegel) *3	dito	VR10	76 kHz	
10	SCA (L)	(C)/(B)	95 MHz 67 kHz, 7.5 kHz Hub SELECTOR: L + R 60 dB (ANT-Eingang)	95 MHz	VR8	Minimaler Ausgang.	
11	SCA (R)	dito	dito	dito	VR9	Minimaler Ausgang.	
MW-ABTEILUNG							
(1)	HF-ABGLEICH (MW)	(D)/(B)	800 kHz 400 Hz, 30% mod	AM 800 kHz	L11, 12, 13	Maximale Amplitude und Symmetrie des Oszilloskopbildes.	
(2)	HF-ABGLEICH (MW)	(D)/(B)	1400 kHz 400 Hz, 30% mod	AM 1400 kHz	TC3, 5, 7	Maximale Amplitude und Symmetrie des Oszilloskopbildes.	
Abstimmungen (1) und (2) mehrere Male wiederholen.							
(3)	FELDSTÄRKE-INSTRUMENT	(D)/(B)	1400 kHz 60 dB (ANT-Eingang)	1400 kHz	VR3	*4	
(4)	KANAL-MITTEN-ANZEIGER	dito	dito	dito	VR4	Nadel des Kanalmitte- Anzeigers muß auf Mittellinie stehen.	

ABGLEICH

Zur Beachtung: Die Trennung wurde mit Hilfe von genauen Meßinstrumenten eingestellt. Da ein gewöhnlicher MPX-Meßsender keine ausreichende Phasengenauigkeit (besonders bei 10 kHz) hat, kein derartiges Gerät für die Einstellung der Trennung verwenden. Es ist empfehlenswerter, die Trennung beim Warten einzustellen. Das Vorgehen beim Einstellen der Trennung wird im folgenden beschrieben.

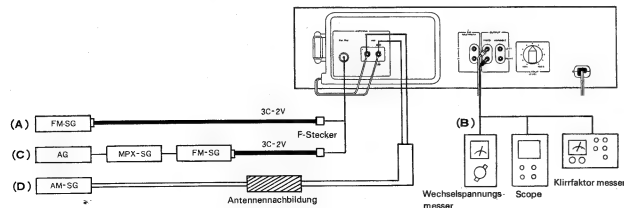
NR	GEGENSTAND	SYSTEM-ANSCHLÜSSE	PRÜFEINRICHTUNG-EINSTELLUNG	TUNER (RECEIVER)-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB. NR.
①	SUB	(C)	95 MHz 1 kHz (Mod) Hub *7 60 dB *3 SELECTOR: L - R	dito	L16	Maximaler Ausgang.	16 16
②	STEREO KANAL TRENNUNG (1)	dito	95 MHz 1 kHz (Mod) 68,25 kHz (Hub) *7 60 dB *3 SELECTOR: L	95 MHz IF BAND: WIDE	Minimales (L → R)	VR5 Übersprechen.	
③	STEREO KANAL TRENNUNG (2)	dito	95 MHz 1 kHz (Mod) 68,25 kHz (Hub) *7 60 dB *3 SELECTOR: R	dito	VR6 (R → L)	dito	
④	STEREO KANAL TRENNUNG (3)	dito	95 MHz 10 kHz, 68,25 kHz Hub *7 60 dB *3 SELECTOR: L oder R	dito	L9	dito *9	
Abstimmungen „① bis ④“ mehrere Male wiederholen.							
⑤	STEREO KANAL TRENNUNG (4)	(C)/(B)	95 MHz 1 kHz, 68,25 kHz Hub *7 60 dB *3 SELECTOR: L oder R	95 MHz IF BAND: NARROW	VR7	Minimales Übersprechen.	
⑥	AUTO BLEND	dito	95 MHz 1 kHz, 68,25 kHz Hub *7 26 dB *3 SELECTOR: L oder R	dito	VR2 (X13-2960)	Mitte Übersprechen	17 17

BEACHTUNG

Nach der Einstellung, sich vergewissern, daß UKW Empfang unter 87,5 MHz oder über 108,5 MHz nicht möglich ist. Falls die UKW Station in diesem Bereich empfangen werden kann, wie folgt nachregeln.
1. UKW-Meßsender auf 108 MHz einstellen, 1 KHz (Mod) und 75 KHz (Dev) und an die antennenbuchse anschließen.

- Den Astimmzeiger des Tuners auf 108 MHz einstellen.
- TCO so einstellen, daß der Abstimmzähler den Mittelpunkt anzeigt.
- TCR1, TCR2 und TC4 so einstellen, daß der Signalfänger den Höchstwert anzeigt.

- TCR1, TCR2 und TC4 so einstellen, daß der Signalfänger den Höchstwert anzeigt.



ABGLEICH

PRÜFINSTRUMENTE

Oszilloskop..... SCOPE
MW-Signalgenerator AM-SG
UKW-Signalgenerator FM-SG
NF-Signalgenerator AG
Wechselspannungsmesser
UKW-Multiplexgenerator FM-MPX
Frequenzzähler
Gleichspannungsmesser
Klirrfaktormesser
Antennennachbildung

- Für präzise Einstellung muß das SG (75Ω Ausgangs-Impedanz) direkt an den Tuner angeschlossen werden. Dazu ein Kabel mit einem BNC-Stecker am einen Ende und einem F-Stecker am anderen Ende verwenden. Wird ein offenes SG (zur Angabe des Ausgangspegels wenn keine zusätzliche Belastung angeschlossen ist) verwendet, 6 dB von der SG-Angabe subtrahieren um den ANT-Eingangspegel zu erhalten. Ist die Ausgangs-Impedanz von SG 50Ω, das 50Ω:75Ω Kunstantenna der neuen IHF-Norm verwenden.



Bei Verwendung eines offenen SG, 12 dB von der SG-Angabe subtrahieren, um den ANT-Eingangspegel zu erhalten. Wird ein belastetes SG (Angabe des Ausgangspegels bei Anschluss von 50Ω) verwendet, 6 dB von der SG-Angabe subtrahieren.

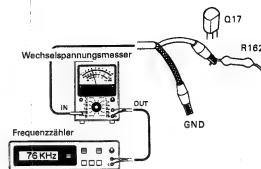
- Den Abstimmknopf so einstellen, daß an der oberen und unteren Grenze der Ausgangswellenform bei schwachem Signal dasselbe Geräusch auftritt.



- Tuner-Eingangspegel.
- Feldstärkeinstrument-Ausschlag: 4,8 Skalenteilen.
- TUNER Eingang für einen Feldstärkeinstrument-Ausschlag von 3 Skalenteilen.
- TUNER Eingang bei Schritt 4.

- Hub mit dem Wahlschalter auf L + R auf 68,25 kHz einstellen. Hub des Kontrollsignals auf 6,75 kHz (9%) einstellen.

*8.

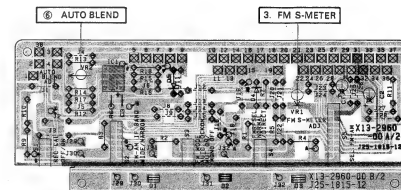
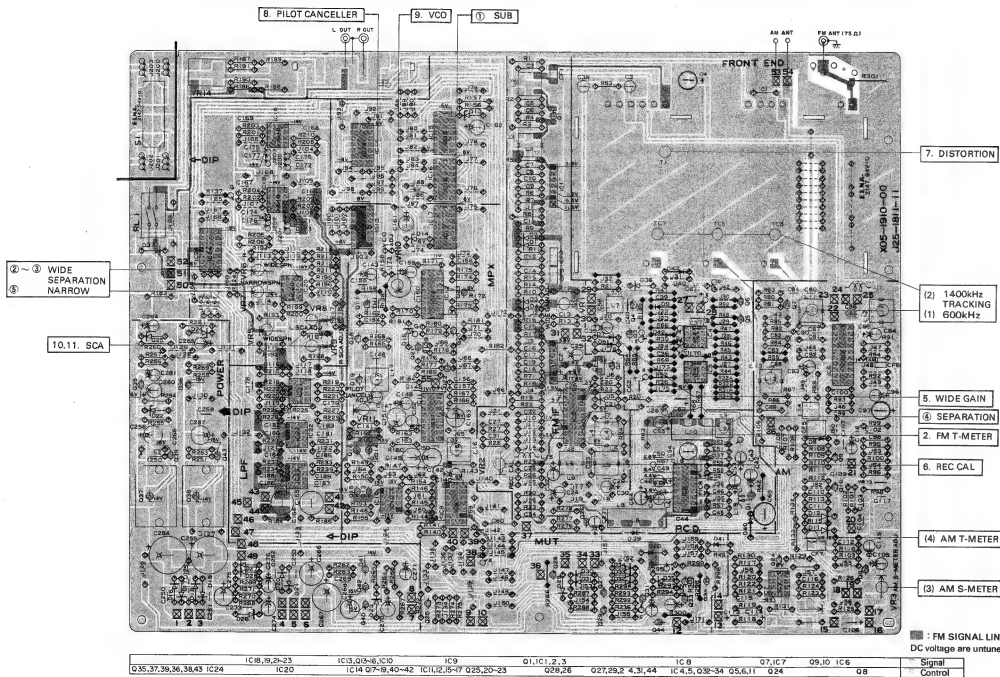


- Ist die Trennung ungenügend, L9 innerhalb von ±3° drehen (wird über ±5° gedreht, so wird die 1 kHz-Trennung negativ beeinträchtigt).

PC BOARD

TUNER (X05-1910) Component side view
 SWITCH (X13-2960) Component side view

Refer to the schematic diagram for the values of resistors and capacitors.



WAVEFORMS AT CHECK POINTS

- ① ~ ④ : FM 95 MHz 0 (Dev) 60 dB (ANT input)
 ⑤ ~ ⑧ : FM 95 MHz 1.9 kHz (Mod) 68.25 kHz (Dev) 60 dB (ANT input)
 ⑨ : FM 95 MHz 1.9 kHz (Mod) 68.25 kHz (Dev) 26 dB (ANT input)

- ① 2uS 5V TOUCH SENSOR
 ② 2uS 2V 1st IF
 ③ 2uS 2V 2nd IF
 ④ 2uS 2V 2nd IF M.M.V.
 ⑤ 1mS 5V FM DETECTOR
 ⑥ 1mS 2V SAMPLING HOLD WAVE
 ⑦ 20uS 1V SAMPLING PULSE (L)
 ⑧ 10uS 5V 150 kHz PULSE
 ⑨ 10uS 5V 76 kHz PULSE
 ⑩ 10uS 10V
 ⑪ 10uS 5V 38 kHz PULSE
 ⑫ 10uS 10V SAMPLING PULSE (R)
 ⑬ 1mS 1V SAMPLING HOLD WAVE
 ⑭ 1mS 1V
 ⑮ 1mS 5V PILOT CANCELLER
 ⑯ 5uS 5V SUB WAVE
 ⑰ 5uS 10V PULSE (SCA)
 ⑱ 2mS 1V REC CAL OUTPUT SIGNAL
 ⑲ 1mS 1V AF OUT AT AUTO BLEND (L)
 ⑳ 1mS 1V AF OUT AT AUTO BLEND (R)

SUBSTITUTION LIST

Semiconductor Used	Substitutions
TC4066BP	μPD40650
MB84002B	TC4002BP, μPD40020
MB84071B	TC4071BP, μPD4071C
MB84013B	TC4013BP, μPD4013C
μPC4557C	NJM4558D, AN6552
2S0828A	2S0945, 2S01685
2SA733(A)	2SA564A, 2SA1127N
2SA850	2SA777 H
2SC1735	2SC1508 H
2SB514	2SB434
2SD330	2SD234
2SK105(H, J)	2SK68(M, N)
1S1555	1S2076
XZ-060	WZ-060
XZ-090	WZ-090

CAUTION:

When using the substitution, make sure the transistor leads are inserted in the correct position.

KENWOOD®

AM-FM STEREO TUNER

2SA850
2SC1735



2SA733
2SC828A



2SB514
2SD330



2SK125



2SK61



2SK105



μPC4557C



TR4011
HA11223W



MB84066B
MB84002B
MB84013B
MB84071B
TC4066BP



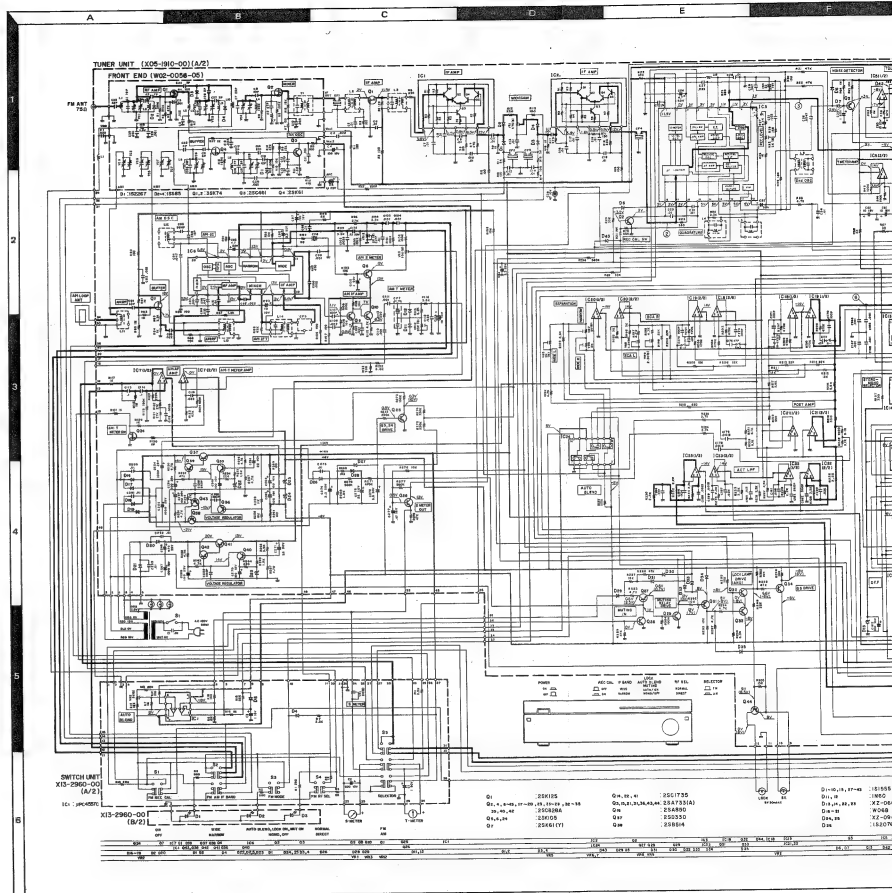
LA1245

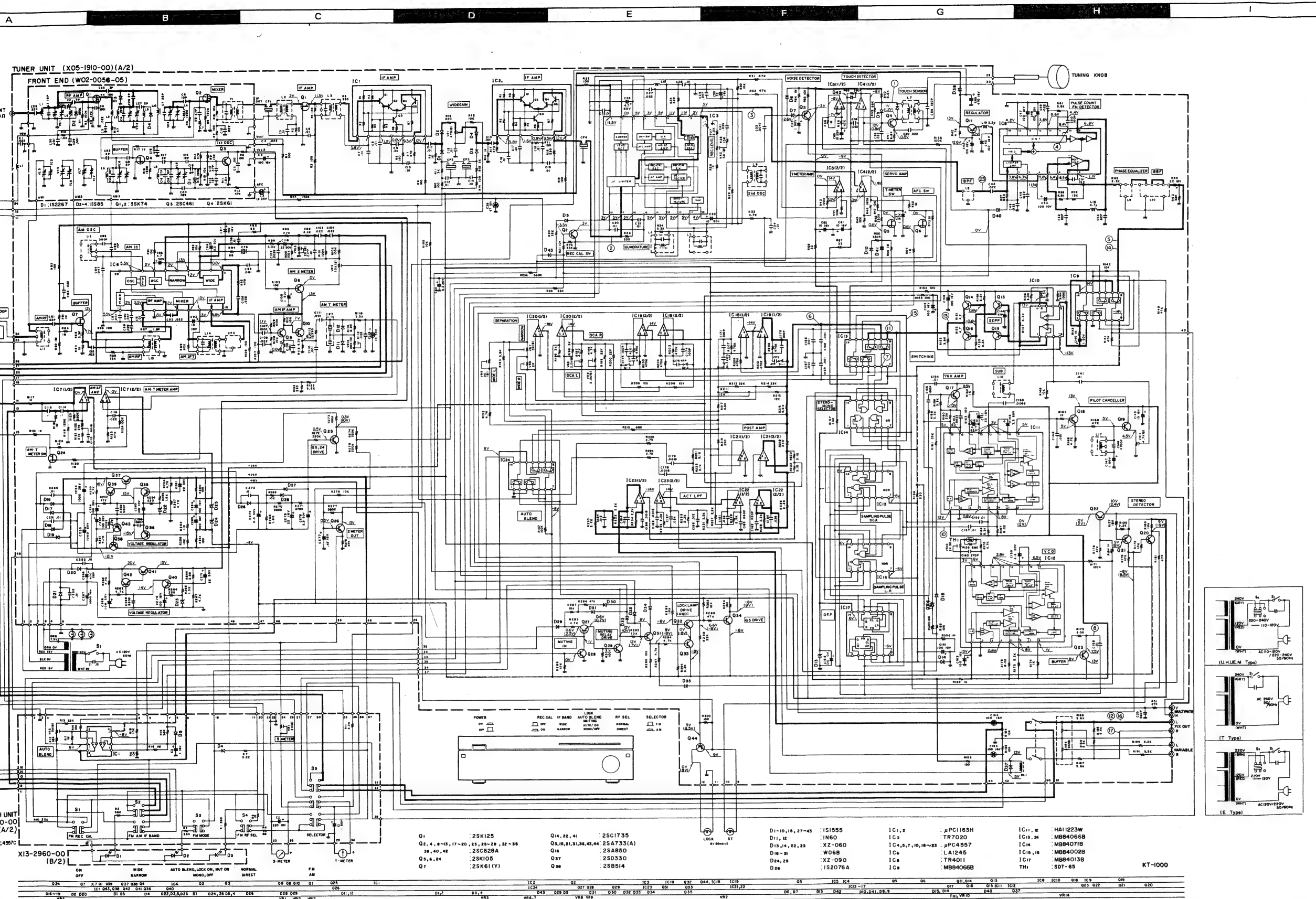


TR7020



μPC1163H





SPECIFICATIONS

FM TUNER SECTION		
Usable Sensitivity	NORMAL 10.3 dBf (1.8 μV)	DIRECT 23.3 dBf (8.0 μV)
50 dB Quieting Sensitivity (Mono)	16.4 dBf (3.6 μV)	29.3 dBf (16 μV)
(Stereo)	37.3 dBf (40 μV)	49.5 dBf (166 μV)
Signal to Noise Ratio (Mono)	90 dB	
(Stereo)	85 dB	
Total Harmonic Distortion Mono	WIDE 100 Hz 0.03%	NARROW 0.04%
	1,000 Hz 0.03%	0.15%
	6,000 Hz 0.05%	0.3%
	15,000 Hz 0.04%	0.07%
50 - 10,000 Hz	0.08%	0.3%
Stereo 100 Hz	0.04%	0.3%
	1,000 Hz 0.04%	0.3%
	6,000 Hz 0.06%	0.3%
	15,000 Hz 0.4%	1.0%
50 - 10,000 Hz	0.12%	0.6%
Capture Ratio	0.8 dB	2.0 dB
Alternate Channel Selectivity	45 dB	65 dB (300 kHz)
Stereo Separation		
	1,000 Hz 60 dB	50 dB
	50 - 10,000 Hz 47 dB	35 dB
	15,000 Hz 40 dB	
Frequency Response	15 Hz to 15,000 Hz	
	±0.5 dB	
Spurious Response Ratio	120 dB	
Image Response Ratio	90 dB	
IF Response Ratio	110 dB	
AM Suppression Ratio	70 dB	
Sub Carrier Product Ratio	73 dB	
Antenna Impedance	75 ohms unbalanced	
FM Frequency Range	88 MHz to 108 MHz	
Output Level 1,000 Hz 100% Mod.		
Fixed	0.75V, 2.2 kohms	
Variable	0 to 1.5V, 2.2 kohms	

AM TUNER SECTION

Usable Sensitivity	10 μV
Signal to Noise Ratio	52 dB
Total Harmonic Distortion	0.2%
Image Rejection	70 dB
Selectivity	30 dB (WIDE), 50 dB (NARROW)
Output Level 400 Hz 30% Mod.	
Fixed	0.25V, 2.2 kohms
Variable	0 to 0.5V, 2.2 kohms

GENERAL

Power Requirements	60 Hz 120V (U.S.A. and Canada Model) or 50/60 Hz 110-120/220-240V switchable
Power Consumption	0.18A
Dimensions	W 440 mm (17-5/16") H 123 mm (4-7/32") D 388 mm (15-9/32")
Net weight	6.5 kg (14.3 lb)

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

DC voltages are measured by a VOM of 25 kΩ/V input impedance.

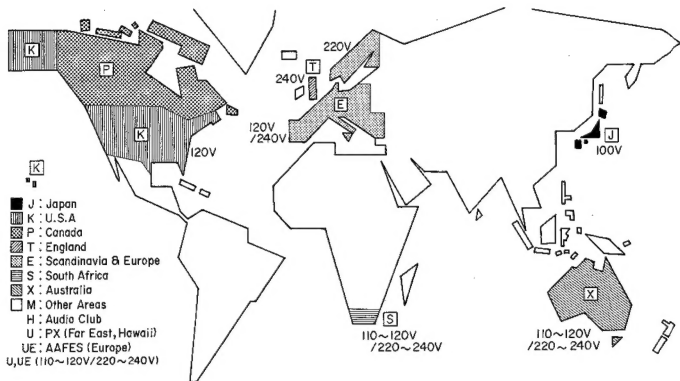
PARTS LIST

Ref. No.	Parts No.	Description	Remarks	Ref. No.	Parts No.	Description	Remarks
参照番号	部品番号	部品名 / 規格	備考	参照番号	部品番号	部品名 / 規格	備考
C96	C25-1733-57	LL-ELEC 3.3UF 50WV		* 100	F13-0615-05	PHONO JACK (6P)	
C97	C25-1210-77	LL-ELEC 100UF 16WV			E04-0005-05	RECEPTACLE	
C99	C25-1733-57	LL-ELEC 3.3UF 50WV					
C102	C46-1739-25	MYLAR .00309UF J		CF1-4	E79-0130-05	CERAMIC FILTER KIT FM	X
C103.104	C46-1722-35	MYLAR .0022UF J		CF1-4	E79-0130-05	CERAMIC FILTER KIT FM	X
C105	C25-1710-57	LL-ELEC 1UF 50WV		CF1-4	E79-0130-05	CERAMIC FILTER KIT FM	X
C107	C25-1710-57	LL-ELEC 1UF 50WV		CF1-7	E79-0138-05	CERAMIC FILTER KIT AM	
C109	C46-1710-25	MYLAR .0010UF J		L2	E40-2292-11	INDUCTOR 2.2UH	
C110	C52-1710-26	CERAMIC .0101UF J		L2	L30-0318-05	IFT FM	
C113.114	C46-1710-57	LL-ELEC 1UF 50WV		L4	L30-0361-05	IFT FM	
C115	C46-1715-25	MYLAR .0015UF J		L4	L30-0361-05	IFT FM	
C117	C46-1710-35	MYLAR .0101UF J		L4	L30-0361-05	IFT FM	
C119	C20-1101-67	NP-ELEC 100UF 10WV		L4	L30-0361-05	IFT FM	
C120	C25-1710-57	LL-ELEC 1UF 50WV		L4	L32-0252-05	OSCILLATING COIL FM	
C141	C91-0083-05	CERAMIC .0101UF N		L7	L32-0242-05	OSCILLATING COIL LW	
C142	C25-1210-77	LL-ELEC 100UF 16WV		L8	L79-0120-05	FILTER (BPF)	
C143	C25-1210-67	LL-ELEC 100UF 16WV		L9	L79-0120-05	FILTER (BPF)	
C145	C25-1210-77	LL-ELEC 100UF 16WV		L10	L79-0125-05	FILTER (BPF)	
C146	C47-74-25	POLYSTY 4700PF J		L11	L31-0463-05	RF COIL	AK
C147	C25-1210-77	LL-ELEC 100UF 16WV		L12	L32-0254-05	OSCILLATING COIL	AM
C148	C46-1710-25	MYLAR .0010UF J		L13	L31-0515-05	RF COIL	AM
C149	C25-1733-57	LL-ELEC 3.3UF 50WV		L14	L30-0337-05	IFT	AP
C150	C46-1782-25	MYLAR .0082UF J		L15	E40-2292-11	INDUCTOR 2.2UH	
C151	C25-1233-67	LL-ELEC 330UF 16WV		L16	L30-0358-05	MOX COIL	AM
C152	C25-1722-57	LL-ELEC 2.2UF 50WV		L18	L40-2292-11	INDUCTOR 2.2UH	
C153	C46-1722-25	MYLAR .0022UF J		L19	E40-2292-11	INDUCTOR 4.7UH	
C154	C91-0083-05	CERAMIC .0101UF N		H61	R49-0239-23	RW 3.9K	F ZE
C155	C91-0083-05	CERAMIC .0101UF N		R67	R43-1233-05	FL-PROOF R033	J ZE
C156	C91-0083-05	CERAMIC .0101UF N		R151	R43-1233-05	FL-PROOF R047	J ZE
C157	C91-0083-05	CERAMIC .0101UF N		R156.157	R43-1233-05	FL-PROOF R0330	J ZE
C158.159	C91-0083-05	CERAMIC .0101UF N		R182	R43-1222-05	FL-PROOF R022	J ZE
C159	C25-1733-57	LL-ELEC 3.3UF 50WV		R83	R43-1215-15	FL-PROOF R150	J ZE
C160	C46-1727-15	POLYSTY 270PF J		R220	R20-2270	TRIMMING POT. 47K	
C161.162	C25-1210-77	LL-ELEC 100UF 16WV		R260.261	R43-1210-15	FL-PROOF R1010	J ZE
C163	C25-1210-77	LL-ELEC 100UF 16WV		R301	R40-0315-08	RC 1.8M	W CH
C164.165	C25-1210-77	NP-ELEC 100UF 16WV		R81	R40-0315-08	TRIMMING POT.	
C166.167	C25-1210-77	NP-ELEC 100UF 16WV		VR1	R12-3301-05	TRIMMING POT.	5K
C170.171	C91-0185-05	POLYSTY 100PF G		VR2	R12-3302-05	TRIMMING POT.	5K
C172.173	C91-0184-05	POLYSTY 47PF G		VR3	R12-3302-05	TRIMMING POT.	10K
C174.175	C91-0185-05	POLYSTY 100PF G		VR5	R12-3303-05	TRIMMING POT.	2K
C176.177	C91-0185-05	POLYSTY 100PF G		VR6	R12-3303-05	TRIMMING POT.	2K
C178.179	C46-1718-25	MYLAR .0018UF J		VR8 -10	R12-1303-05	TRIMMING POT.	2K
C180.181	C46-1736-35	MYLAR .0036UF J		VR11	R12-2302-05	TRIMMING POT.	5K
C182.183	C47-1759-15	POLYSTY 560PF J		VR12	R12-3606-05	TRIMMING POT.	20K
C184.185	C46-1710-35	MYLAR .0135-35		VR13	R12-3606-05	TRIMMING POT.	20K
C186.187	C46-1724-35	MYLAR .0024UF J		VR14	R06-2017-05	POTENTIOMETER 5K(B)	
C188.189	C46-1715-25	MYLAR .0015UF J		RL1	S51-2033-05	RELAY	
C250-253	C55-1710-38	CERAMIC .010UF Z		ST	S31-0411-05	SLIDE SWITCH	
C254.255	C24-1410-81	ELECTRO 100UF 25WV		U1 -5	V11-0076-05	151555	
C256.257	C24-1410-79	ELECTRO 100UF 25WV		U10	V11-0076-05	151555	
C258.259	C24-1410-79	ELECTRO 100UF 25WV		D9	V11-0076-05	151555	
C260	C24-1010-79	ELECTRO 100UF 10WV		U9	V11-0076-05	151555	
C261	C24-1222-67	ELECTRO 22UF 16WV		U10	V11-0076-05	151555	
C264.265	C24-1010-79	ELECTRO 100UF 10WV		U11	V11-0076-05	151555	
C267	C24-1210-67	ELECTRO 100UF 10WV		U12	V11-0076-05	151555	
C268	C24-1410-71	ELECTRO 100UF 25WV		U13	V11-0076-05	151555	
C269	C24-1010-76	CERAMIC 560PF K		U14	V11-0076-05	151555	
C270	C24-1210-67	ELECTRO 100UF 10WV		U15	V11-0076-05	151555	
C273	C25-1710-26	CERAMIC .0101UF J		U16	V11-0076-05	151555	
C274	C25-1733-57	LL-ELEC 3.3UF 50WV		U17	V11-0076-05	151555	
C275	C24-1222-67	ELECTRO 22UF 16WV		U18	V11-0076-05	151555	
C276	C25-1733-57	LL-ELEC 3.3UF 50WV		U19	V11-0076-05	151555	
C277	C25-1747-47	LL-ELEC 0.47UF 50WV		U20	V11-0076-05	151555	

PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
IC6	V30-0519-10	LA1245	
IC7	V30-0273-20	UPC4557C	
IC8	V30-0509-10	TR4011	
IC9	V30-0514-10	MB84066B	
IC10	V30-0273-20	UPC4557C	
IC11, 12	V30-0246-20	HA11223W	
IC13	V30-0516-10	MB84066B	
IC14	V30-0530-10	MB84071B	
IC15-16	V30-0528-10	MB84002B	
IC17	V30-0529-10	MB84013B	
IC18-23	V30-0273-20	UPC4557C	
IC24	V30-0516-10	MB84066B	
Q1	V09-0136-10	2SK125	
Q2	V03-0504-05	2SC828A	
Q3	V01-0733-90	2SA733(A)	
Q4	V03-0504-05	2SC828A	
Q5 ,6	V09-0127-40	2SK105(H,J)	
Q7	V09-0124-20	2SK61(V)	
Q8 -11	V03-0504-05	2SC828A	
Q13	V03-0504-05	2SC828A	
Q14	V03-0452-05	2SC1735	
Q15	V01-0733-90	2SA733(A)	
Q16	V01-0173-05	2SA850	
Q17 -20	V03-0504-05	2SC828A	
Q21	V01-0733-90	2SA733(A)	
Q22	V03-0452-05	2SC1735	
Q23	V03-0504-05	2SC828A	
Q24	V09-0127-40	2SK105(H,J)	
Q25 -29	V03-0504-05	2SC828A	
Q31	V01-0733-90	2SA733(A)	
Q31	V01-0733-90	2SA733(A)	
Q32 -35	V03-0504-05	2SC828A	
Q36	V01-0733-90	2SA733(A)	
Q37	V04-0330-00	2SD330	
Q38	V02-0514-20	2SD514(E,F)	
Q39 ,40	V03-0504-05	2SC828A	
Q41	V03-0452-05	2SC1735	
Q42	V03-0504-05	2SC828A	
Q44	V01-0733-90	2SA733(A)	
TR1	V22-0006-05	SDT-65	
-	W02-0056-05	FM FRONT END	*
SWITCH (X13-2960-00)			
D1 -3	B30-0244-05	LAMP(LED)	*
D4 ,5	V11-0076-05	1K1555	
IC1	V30-0273-20	UPC4557C	
C1	C24-1710-57	ELECTRN 1UF 50V	
C2	C24-1022-71	ELECTRN 220UF 10V	
C3	C24-1710-57	ELECTRN 1UF 50V	
VR1	R12-1303-05	TRIMMING POT. 2K	
VR2	R12-2302-05	TRIMMING POT. 5K	
S1 -5	S42-5022-05	PUSH SWITCH	*
FRONTEND (W02-0056-00)			
D1	V11-2200-30	1S2267	
D2 -4	V11-7702-00	1S5R5	
Q1 ,2	V09-1002-56	3SK74	
Q3	V03-0461-20	2SC461	
Q4	V09-0124-20	2SK61	

WORLD MAP & AREA CODE



Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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